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Amendments to the Claims

Please amend the claims as follows without prejudice or disclaimer. This claim listing replaces all prior listings and versions.

1. (Currently Amended) ~~An isolated and purified vaccine comprising a nucleic acid molecule comprising a nucleic acid sequence which encodes a polypeptide selected from any one the group consisting of:~~ (a) SEQ ID No: 2; ~~(b) SEQ ID No: 4; (e)(b)~~ SEQ ID No: 6; ~~(d) SEQ ID No: 8; (e)(c)~~ an immunogenic fragment comprising at least 12 consecutive amino acids from a polypeptide of (a) ~~to (d) or (b)~~; and, ~~(f)d~~ a polypeptide of (a), (b), ~~or (c) or (d)~~ which has been modified by conservative amino acid substitution without loss of immunogenicity, wherein said modified polypeptide is at least 75% identical in amino acid sequence to the corresponding polypeptide of (a), (b), ~~or (c) or (d)~~.
2. (Currently amended) A ~~vaccine comprising a isolated and purified~~ nucleic acid molecule comprising a nucleic acid sequence selected from ~~any one the group consisting of:~~ (a) SEQ ID No: 1; ~~(b) SEQ ID No: 3; (eb)~~ SEQ ID No: 5; ~~(e) SEQ ID No: 7; (e)(c)~~ a sequence comprising at least 38 consecutive nucleotides from any one of the nucleic acid sequences of (a) ~~to (d) or (b)~~; and, ~~(f)d~~ a sequence which encodes a polypeptide which has been modified by conservative amino acid substitution without loss of immunogenicity and which is at least 75% identical in amino acid sequence to the polypeptides encoded by SEQ ID No: 1,3, ~~or 5, or 7~~.
3. (Currently amended) A ~~isolated and purified nucleic acid molecule vaccine~~ comprising a nucleic acid sequence which is complementary to any one of the nucleic acid molecules of claim 1.
4. (Currently amended) A nucleic acid molecule comprising a nucleic acid sequence which encodes a fusion protein, said fusion protein comprising a polypeptide selected from the group consisting of: (a) SEQ ID No: 2; (b) SEQ ID No: 6; (c) an immunogenic fragment comprising at least 12 consecutive amino acids from a polypeptide of (a) or (b); and, (c) a polypeptide of (a) or (b) which has been modified by conservative amino acid substitution without loss of immunogenicity, wherein said modified polypeptide is at least 75% identical in amino acid sequence to the

~~corresponding polypeptide of (a) or (b); encoded by a nucleic acid molecule according to claim 1 and, an additional polypeptide.~~

5. (Original) The nucleic acid molecule of claim 4 wherein the additional polypeptide is a heterologous signal peptide.
6. (Original) The nucleic acid molecule of claim 4 wherein the additional polypeptide has adjuvant activity.
7. (Currently Amended) A nucleic acid molecule according to any one of claims 4 to 6, operatively linked to one or more expression control sequences.
8. (Currently amended) A vaccine comprising a vector comprising a nucleic acid molecule which encodes a polypeptide selected from any one of: (a) SEQ ID No: 2; ~~(b) SEQ ID No. 4; (eb)~~ SEQ ID No: 6; ~~(d) SEQ ID No. 8; (e)(c)~~ an immunogenic fragment comprising at least 100 consecutive amino acids from the polypeptide of any one of (a) to ~~(d) or (b); and, (d)~~ a polypeptide of any one of (a) to ~~(e)(c)~~ which has been modified by conservative amino acid substitution, wherein said modified polypeptide is at least 90% identical in amino acid sequence to the corresponding polypeptide of any one of (a) to ~~(e)(c)~~; wherein the nucleic acid molecule is either operatively linked to one or more control sequences for expression of the polypeptide in a mammalian or a bacterial cell, wherein the vaccine provides an immune response protective against disease caused by Chlamydia Chlamydia.
9. (Currently Amended) The vaccine of claim 8 wherein the vaccine optionally comprises an additional nucleic acid encoding an additional polypeptide which enhances the immune response to the polypeptide selected from any one of (a) to ~~(d)~~.
10. (Currently Amended) A ~~pharmaceutical composition vaccine~~ comprising a pharmaceutically acceptable carrier or diluent suitable for use in a vaccine and a nucleic acid molecule which encodes a polypeptide selected from any one of: (a) SEQ ID No: 2; ~~(b) SEQ ID No. 4; (eb)~~ SEQ ID No: 6; ~~(d) SEQ ID No. 8; (e)(c)~~ an immunogenic fragment comprising at least 100 consecutive amino acids from the polypeptide of (a) to ~~(d) or (b); and, (d)~~ a polypeptide of any one of (a) to ~~(e)(c)~~ which has been modified by conservative amino acid substitution without loss of immunogenicity; wherein said modified polypeptide is at least 90% identical in

amino acid sequence to: the corresponding polypeptide of any one of (a) to (e)(c); wherein the nucleic acid molecule is operatively linked to one or more control sequences for expression of the polypeptide in a mammalian cell.

11. (Currently Amended) The ~~pharmaceutical composition vaccine~~ of claim 10 comprising a pharmaceutically acceptable carrier or diluent suitable for use in a vaccine and a nucleic acid molecule which encodes a polypeptide ~~selected from any one of: (a) of SEQ ID No: 2; (b) SEQ ID No. 4; (e) or SEQ ID No: 6; and (d) SEQ ID No: 8.~~
12. (Currently Amended) The ~~pharmaceutical composition vaccine~~ of claim 10 comprising a pharmaceutically acceptable carrier or diluent suitable for use in a vaccine and a nucleic acid molecule which encodes a polypeptide selected from any one of: (a) SEQ ID No: 2; (b) ~~SEQ ID No. 4; (e)(b)~~ SEQ ID No: 6; (d) ~~SEQ ID No: 8;~~ and, (e)(c) an immunogenic fragment comprising at least 100 consecutive amino acids from the polypeptide of (a) to (d) or (b).
13. (Currently Amended) The vaccine of claim 8 comprising a vaccine vector wherein the vaccine vector comprises a nucleic acid molecule which encodes a polypeptide ~~selected from any one of: (a) of SEQ ID No: 2; (b) SEQ ID No. 4; (e) or SEQ ID No: 6; and (d) SEQ ID No: 8.~~
14. (Currently Amended) The vaccine of claim 8 comprising a vaccine vector wherein the vaccine vector comprises a nucleic acid molecule which encodes a polypeptide selected from ~~any one the group consisting of:~~ (a) SEQ ID No:2; (b) ~~SEQ ID No. 4;~~ (e)(b) SEQ ID No:6; (d) ~~SEQ ID No: 8;~~ and, (e)(c) an immunogenic fragment comprising at least 100 consecutive amino acids from the polypeptide of (a) to (d) or (b).
15. (Currently Amended) The vaccine of claim 8 comprising a vaccine vector wherein the vaccine vector comprises a nucleic acid molecule which encodes a polypeptide selected from any one of: (a) SEQ ID No:2; (b) ~~SEQ ID No. 4;~~ (e)(b) SEQ ID No:6; (d) ~~SEQ ID No: 8;~~ and, (e)(c) a polypeptide of ~~any one of~~ (a) to (d) or (b) which has been modified by conservative amino acid substitution without loss of immunogenicity, wherein said modified polypeptide is at least 90% identical in amino acid sequence to the corresponding polypeptide of any one of (a) to (d) or (b).

16-29. (Cancel)

30. (Currently Amended) An immunogenic composition comprising an isolated polynucleotide from a strain of Chlamydia selected from the group consisting of: (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1; (b) ~~a polynucleotide comprising the nucleotide sequence of SEQ ID NO:3;~~ (e)(b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:5; (d) ~~a polynucleotide comprising the nucleotide sequence of SEQ ID NO:7;~~ (e)(c) a polynucleotide that is at least 95% homologous to the nucleotide sequence of SEQ ID NO:1, 3, 5, or 7; and, (f)(d) a polynucleotide which hybridizes under stringent hybridizing conditions of 6xSSC containing 50% formamide at 42°C with a polynucleotide comprising the nucleotide sequence of SEQ ID NO: 1, 3, or 5, or 7 wherein administration of ~~said isolated polynucleotide, in an immunogenically effective amount~~ the composition to a mammal, induces an immune response in said mammal against infection by said strain of *Chlamydia*.

31-32. (Cancel)

33. (Currently Amended) A vaccine comprising a nucleic acid molecule encoding a polypeptide selected from any one of: (a) SEQ ID No: 2; (b) ~~SEQ ID No. 4;~~ (e)(b) SEQ ID No: 6; (d) ~~SEQ ID No: 8;~~ (e)(c) an immunogenic fragment comprising at least 100 consecutive amino acids from the polypeptide of any one of (a) to (d) or (b); and, (f)(d) a polypeptide of any one of (a) to (e)(c) which has been modified by conservative amino acid substitution, wherein said modified polypeptide is at least 90% identical in amino acid sequence to the corresponding polypeptide of any one of (a) to (e)(c); wherein the nucleic acid molecule is either operatively linked to one or more control sequences for expression of the polypeptide in a mammalian or a bacterial cell, wherein the vaccine provides an immune response protective against disease caused by *Chlamydia Chlamydia*.

34. (Cancel)

35. (Original) The vaccine of claim 33 further comprising an adjuvant.

36. (Original) The vaccine of claim 35 wherein said adjuvant is an ISCOM adjuvant.

37-38. (Cancel)